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PATENT

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of

Geoffrey B. Rhoads

Application No.: 09/527,971

Filed: March 17, 2000

For: PRE-FILTERING TO INCREASE WATERMARK SIGNAL-TO-NOISE RATIO

Examiner: N. Wright

Date: February 2, 2005

Response Under 37 CFR § 1.116
Expedited Procedure
Art Unit 2134
Conf. No.: 4496

CERTIFICATE OF MAILING

I hereby certify that this paper and the documents referred to as being attached or enclosed herewith are being deposited with the United States Postal Service on February 2, 2005, as First Class Mail in an envelope addressed to: MAIL STOP AF, COMMISSIONER FOR PATENTS, P.O. BOX 1450, ALEXANDRIA, VA 22313-1450.

Joel R. Meyer
Attorney for Applicant

TRANSMITTAL LETTER

MAIL STOP APPEAL BRIEF – PATENTS
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Enclosed for filing in the above-captioned matter are the following:

☒ Appeal Brief (fee **$500.00**)

☒ Applicant petitions for a one month extension of time from January 24, 2005 to February 24, 2005. If any additional extension of time is required, please consider this a petition therefor. (fee **$120.00**)

☒ Please charge **$620.00** (fee for Appeal Brief and extension of time) and any additional fees which may be required in connection with filing this document and any extension of time fee, or credit any overpayment, to Deposit Account No. 50-1071.

Respectfully submitted,

Date: February 2, 2005

DIGIMARC CORPORATION

CUSTOMER NUMBER 23735

By

Joel R. Meyer
Registration No. 37,677

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Joel R. Meyer
Attorney for Applicant

APPEAL BRIEF

MAIL STOP
COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

This brief is in furtherance of the Notice of Appeal filed November 24, 2004. Please charge the fee required under 37 CFR 1.17(f) or any deficiency to deposit account 50-1071 (see transmittal letter).

02/08/2005 HDEMESS1 00000022 501071 09527971
01 FC:1402 500.00 DA

I. REAL PARTY IN INTEREST

The real party in interest is Digimarc Corporation, by an assignment from the inventor recorded at Reel 010884, Frames 0864-0866, on June 23, 2000.

II. RELATED APPEALS AND INTERFERENCES

There are no related appeals or interferences.

III. STATUS OF CLAIMS

Claims 1-12 are finally rejected and appealed.

IV. STATUS OF AMENDMENTS

All earlier-filed amendments have been entered.

V. SUMMARY OF CLAIMED SUBJECT MATTER

As set forth in claim 1, one aspect of the invention is a system for detecting a watermark in host data. The specification refers to a watermark as hidden digital information embedded in host data. See, e.g., specification at page 1, lines 9-10. The system of claim 1 includes a watermark detection mechanism which utilizes knowledge of characteristics of a watermark to detect presence of a watermark. See, for example, Fig. 2 elements 11 and 12 and accompanying text at pages 2-5. It also includes a filter which removes aspects of the host data that are not carrying a watermark signal, thereby enhancing the signal to noise ratios of the watermark signal. See, for example, Fig. 2, elements 21 and 22, and accompanying text at pages 3-5.

As set forth in claim 5, another aspect of the invention is a method of extracting digital watermark data from host data. This method includes receiving said host data as input to a watermark detection operation to detect a watermark signal embedded in said host data, and pre-filtering the host data prior to the watermark detection operation thereby enhancing the signal to

noise ratios of the watermark signal. See, for example, Fig. 2, elements 21 and 22 and accompanying text at pages 3-5.

As set for in claim 12, another aspect of the invention is a method of detecting a watermark signal in host data which includes, first filtering the host data using a high pass Laplacian filter {e.g., page 3, lines 14-20, page 4, lines 4-15}, applying a nonlinear signum function to the output of the high pass filter {e.g., page 3, line 21 to page 4, line 3}, and then detecting the presence of a watermark signal in said filtered data {e.g., Fig. 2, elements 11 and 12, and accompanying text on page 3}.

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Claims 1-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Pat. No. 5,659,726 to Sanford, II et al. ("Sandford"), in view of U.S. Pat. No. 4,907,156 to Doi et al. ("Doi").

VIII. ARGUMENT

Claims 1-12 are not obvious in view of Sandford and Doi

Claims 1-4

The combined teachings of Sandford and Doi fail to teach or suggest "a filter which removes aspects of the host data that are not carrying a watermark signal, thereby enhancing the signal to noise ratios of the watermark signal" in the context of a system for detecting a watermark as claimed. The Office acknowledges that both of the cited references are "silent with respect to the filtering before detecting embedded data," yet it fails to adequately establish that the claimed filter was known in a system for detecting a watermark.

First, the Office improperly relies on "official notice" that it would have been obvious to augment Sandford with a filter as claimed. The Office provides no documentary evidence to support its reliance on official notice. As set forth in MPEP 2144.03, official notice without

documentary evidence to support an examiner's conclusion is permissible only in some circumstances. While "official notice" may be relied on, these circumstances should be rare when an application is under final rejection or action under 37 CFR 1.113. It is improper for the examiner to take official notice of facts without citing a prior art reference where the facts asserted to be well known are not capable of instant and unquestionable demonstration as being well-known. For example, assertions of technical facts in the areas of esoteric technology or specific knowledge of the prior art must always be supported by citation to some reference work recognized as standard in the pertinent art. See MPEP 2144.03, and cases cited therein. The Office has provided no such citation for its position that the claimed filter would have been obvious in a system for detecting a watermark.

The Office has failed to provide requisite specific factual findings predicated on sound technical and scientific reasoning to support its conclusion of common knowledge as required in MPEP 2144.03. Instead, the Office makes a conclusion about the motivation to use filtering in watermark detection based on the following unsupported assumptions: "...the original digital image to be transmitted would have to be filtered to render as close a representation as possible to the original image. While the embedded digital image would require filtering to get as precise a verification image as possible." The Office implies that filtering is necessary, yet provides no support for these assumptions.

The Office has taken Official Notice for the first time in a final rejection, and as a result, it has improperly precluded Applicant from rebutting the Office's position on Official Notice, contrary to MPEP guidelines.

The Office has argued that it would have been obvious to augment Sandford with the spatial filtering of a digital image in Doi to enhance the SNR of a digital image. The Office's reasoning is that one of ordinary skill in the art would be motivated to use digital spatial filters to clear up images from background distortions/noise. However, the claim recites: "a filter which removes aspects of the host data that are not carrying a watermark signal, thereby enhancing the signal to noise ratios of the watermark signal." The Office has not made a correlation between clearing up images from background noise and the specific type of filter claimed. For example, even if filters for clearing up background noise were known, it is not clear how this would enhance the signal to noise ratios of a watermark signal. If care is not taken, filters used to clear

up images from background noise might adversely impact the watermark signal and have the opposite effect of increasing the signal to noise ratios of the watermark signal.

The Office has cited no teaching or suggestion in either Sandford or Doi that a system for a digital watermark detector could use a filter as claimed. The Office notes that Sandford fails to teach the claimed filter or filtering. Doi uses filters to detect spatial regions representing "nodules," but the applicability of such filters to watermarks has not been shown. The claims refer to detecting or extracting a watermark in host data, where a watermark is referred to in the specification as hidden digital information embedded in the host data. See, for example, specification at page 1, lines 9-10. The office has not persuasively established that detecting spatial features like nodules is analogous to detecting hidden digital information embedded in host data, such as watermarks.

In view of the above, the Office has not carried its burden to establish a prima facie case of obviousness.

Claims 5 and 7-9

Sandford and Doi, considered alone or in combination, fail to teach or suggest: "pre-filtering said host data prior to the watermark detection operation thereby enhancing the signal to noise ratios of the watermark signal." The Office acknowledges that the cited art fails to teach all of the elements of claim 5, and in particular fails to teach the claimed "pre-filtering." It also improperly relies on Official Notice in a final rejection to conclude that the claimed "pre-filtering" operation would have been obvious. There is no evidence to suggest that the filtering operations of Doi would be usable as the claimed "pre-filtering" of host data prior to watermark detection "thereby enhancing the signal to noise ratios of the watermark signal." Moreover, the Office has failed to show that either Sandford or Doi suggest the use of the claimed pre-filtering to enhance signal to noise ratios in a method of extracting digital watermark data from host data.

Claims 6 and 10-11

Sandford and Doi fail to teach or suggest the elements of claim 6. Again, the Office improperly relies on Official Notice in a final rejection. The Office has provided no evidence that applying the claimed high pass operator followed by applying the claimed nonlinear

operator is obvious in the context of extracting a digital watermark, and specifically, in the context of enhancing the signal to noise ratios of the watermark signal.

Claim 12

Sandford and Doi fail to teach or suggest the claimed method of detecting a watermark signal in host data as recited in claim 12. The Office has improperly relied on Official Notice in a final rejection without providing any documentation to show that the claimed filter and nonlinear function would have been obvious.

Respectfully submitted,

Date: February 2, 2005

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APPENDIX

Pending Claims

1) A system for detecting a watermark in host data which includes:

a watermark detection mechanism which utilizes knowledge of characteristics of a watermark to detect presence of a watermark, and

a filter which removes aspects of the host data that are not carrying a watermark signal, thereby enhancing the signal to noise ratios of the watermark signal.

2) The system recited in claim 1 where the host data is image data.

3) The system recited in claim 1 where the host data is audio data.

4) The system recited in claim 1 where the host data is video data.

5) A method of extracting digital watermark data from host data which includes,

receiving said host data as input to a watermark detection operation to detect a watermark signal embedded in said host data; and

pre-filtering said host data prior to the watermark detection operation thereby enhancing the signal to noise ratios of the watermark signal.

6) The method recited in claim 5 wherein said pre-filtering comprises first applying a highpass operator to said host data and then applying a nonlinear operator to said data.

7) The method of claim 5 wherein the host data is image data.

8) The method of claim 5 wherein the host data is audio data.

9) The method of claim 5 wherein the host data is video data.

10) The method of claim 6 wherein said highpass operator is a Laplacian operator.

11) The method of claim 6 wherein said nonlinear operator is a Signum operator.

12) The method of detecting a watermark signal in host data which includes, first filtering said host data using a high pass Laplacian filter, applying a nonlinear signum function to the output of said high pass filter, and then detecting the presence of a watermark signal in said filtered data.